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| 10/566,950 | 02/03/2006 | Harunori Narihiro | 053673-0028 | 3048 |
| 20277 7590 02/27/2009 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096 | | | | |
| EXAMINER GARRETT, DAWN L | | | | |
| ART UNIT 1794 | | PAPER NUMBER | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/566,950

Examiner

Dawn Garrett

Applicant(s)

NARIHIRO ET AL.

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2008.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action is responsive to the amendment received November 25, 2008. Claims 1 and 4-7 were amended. Claim 3 is cancelled. Claims 1, 2, and 4-7 are pending.
2. The objections to claims 1 and 4-7 set forth in the last Office action (mailed August 6, 2008) are withdrawn due to the amendment.
3. The rejection of claims 1-2 under 35 U.S.C. 102(b) as being anticipated by Taguchi (JP 2002302516) is withdrawn due to the amendment.
4. The rejection of claims 1-2 under 35 U.S.C. 102(a) as being anticipated by Watanabe et al. (JP 2004-018787) is withdrawn due to the amendment.
5. The rejection of claims 1-2 under 35 U.S.C. 102(a) as being anticipated by Kita et al. (JP 2004185967) is withdrawn due to the amendment.
6. The rejection of claim 3 under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. (JP 2004-018787) is withdrawn due to the cancellation of claim 3.
7. The rejection of claim 3 under 35 U.S.C. 103(a) as being unpatentable over Kita et al. (JP 2004185967) is withdrawn due to the cancellation of claim 3.
8. The rejection of claims 1-2 under 35 U.S.C. 103(a) as being unpatentable over Sakakibara (JP 2002124390) is withdrawn due to the amendment.
9. The rejection of claim 3 under 35 U.S.C. 103(a) as being unpatentable over Sakakibara (JP 2002124390) (Sakakibara (JP)) and further in view of Sakakibara et al. (US 6,872,474) is withdrawn due to the cancellation of claim 3.

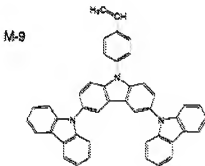
Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

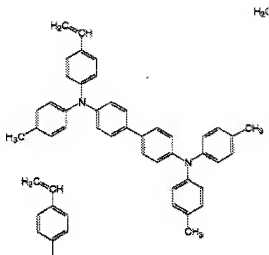
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 2, and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. (JP 2004-018787).

Concerning claims 1-2, Watanabe et al. describe polymer materials having a monomer unit having the structure (M-9) such as the one shown below. In this case, Applicant's subunit C is a carbazole according to Applicant's formula [3] (per claim 2), and subunit B includes two groups bonded to each other, the first (phenylene) and second (carbazolyl, heteroaromatic), where the second group is substituted.



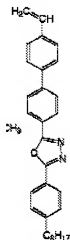
Watanabe et al. further discloses that the polymer may be copolymeric with a second monomer unit [0047]-[0048], and discloses a handful of preferred co-monomers, including the structure shown below. [0054]



Watanabe et al. are silent on a specific example of a copolymer having the two monomers shown above, but given the explicit teaching of copolymeric materials, and the explicit teaching of a limited number of preferred co-monomers, including the structure shown above, it would have been obvious to one of ordinary skill to make the copolymer with the two monomer units described above.

Concerning unit [7] of claim 1 and a further monomer per claim 4, Watanabe et al. describes the copolymer materials discussed above, but further state that the copolymer can include two or more monomers. Watanabe et al. are silent on the use of a further oxadiazole and carbazole monomer in the copolymer material. Watanabe et al. further disclose other monomer units, such as the one shown below, [0054] and disclose that oxadiazole structures shown electron transporting ability [0052]. It is well known in the art to include electron transporting monomer units into a copolymer to increase the electron transport capability of the polymer material. Given the teaching of the use of more than two monomer units in the copolymer, and the teaching of an oxadiazole monomer as a preferred co-monomer, it would have been obvious to one of ordinary skill in the art to use the oxadiazole monomer shown below in a copolymer as

described above for the purpose of increasing the electron transporting capability of the polymer material.



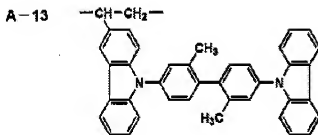
With regard to claim 4, it would have also been obvious to one of ordinary skill in the art at the time of the invention to incorporate further vinylcarbazole units, because Watanabe et al. clearly teaches the inclusion of multiple monomers into the polymer and clearly teaches carbazole-containing units. It is obvious to combine two materials taught by the prior art as useful for the same purpose to be used for the very same purpose.

With regard to claims 5-7, Watanabe discloses the polymers are used in a layer of a device, triplet light emission may be achieved, and a device may have a lithium fluoride layer, which reads upon an electron transporting material (see abstract).

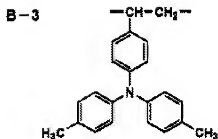
Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

12. Claims 1, 2, and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita et al. (JP 2004-185967).

With regard to claims 1-2, Kita et al. describe the copolymer material having the monomer units shown below (A-13 and B-3) (see polymer 1-4, table 1, page 42). In this case Applicant's subunit C is represented by a carbazole according to Applicant's formula [3] (per claim 2), while the amine containing unit is the triphenylamine monomer shown below. Applicant's subunit B is represented by 3 (two or more) groups, in this case carbazole (heteroaromatic), and two phenylene groups.

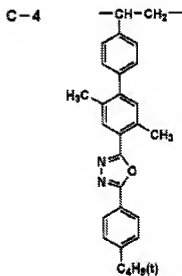


1.



Concerning unit [7] of claim 1, Kita et al. disclose the polymer material discussed above. Kita et al. further disclose copolymer comprising 3 monomers, where one (A) has the function of a luminescent host, one (B) has a hole transporting function, and one (C) has an electron transporting function. [0027] Monomers (A) include carbazole derivatives such as the one discussed above. Monomers (B) are triaryl amines, such as the ones discussed above, while

monomers (C) are electron transporting, and include oxadiazole monomers, such as the one shown below [0074]. Kita et al. discloses that the materials are suitable hosts for phosphorescent dopants. (Abstract) [0027]



Given the teaching by Kita et al. of a copolymer material comprising 3 monomers, including an electron transporting monomer such as the oxadiazole shown above, it would have been obvious to one of ordinary skill to synthesize the polymer where monomer (A) has the carbazole structure, monomer (B) has the triarylamine structure, and monomer (C) has an oxadiazole structure, and to predict that the material would function as a host for phosphorescent dopants, as described by Kita et al.

With regard to claim 5, Kita et al. teaches phosphorescence dopants in the emitter layer (see par. 24 and 34).

With regard to claim 6, the electronic injection layer reads upon the inclusion of an electron transporting material (see par. 143).

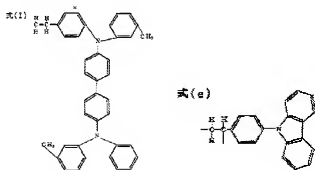
With regard to claim 7, the polymeric material is clearly used as a layer within a device (see entire document and par. 143).

With regard to claim 4, it would have been obvious to one of ordinary skill in the art to have further incorporated additional vinylcarbazole monomer, because it is obvious to combine two materials taught by the prior art as useful for the same purpose to be used for the very same purpose.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

2. Claims 1, 2, and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakakibara (JP 2002-124390) (Sakakibara (JP)) and further in view of Sakakibara et al. (US 6,872,474).

With regard to claims 1-2, Sakakibara describes copolymer materials having on monomer having a first structure (I) shown below and a monomer having a second structure (e) shown below. (See example 3, [0043])



Sakakibara discloses that the material is suitable as a hole transporting material for an electroluminescent device (abstract). Sakakibara is silent on a copolymeric material where the carbazole containing monomer has more than one aromatic or heteroaromatic ring between the carbazole and the polymer backbone. However, the function of the material is based in the carbazole portion of the material, which functions to transport holes. Therefore, it would have been obvious to one of ordinary skill to include a further aromatic ring between the carbazole ring and the polymer backbone and predict that the material would still function as a hole transporting material, particularly as a copolymer with the hole-transporting triarylamine portion.

Concerning claim unit [7] of claim 1, Sakakibara et al. describe the polymer material discussed above, but are silent on the use of an oxadiazole containing monomer in the copolymer material.

Sakakibara et al. '474 describe polymer materials as host materials for phosphorescent dopants, where the polymer material is a copolymer of a hole transporting material and an electron transporting material. (column 3, line 66-column 4, line 6) As hole transporting monomers, Sakakibara et al. describe polymerizable compounds such as aromatic tertiary amine compounds having a triphenylamine skeletal structure or carbazole skeletal structure (column 4, lines 14-22), both of which are described by Sakakibara (JP). The additional aromatic ring between the carbazole and the polymer backbone would be predicted not to alter the hole transporting function of the carbazole material.

Sakakibara et al. further disclose preferably oxadiazole materials for the electron transporting monomer (column 4, lines 48-62). It is well known in the art to include electron

transporting monomers into copolymer materials to increase the electron transport ability of the polymer materials.

Given this teaching, it would have been obvious to one of ordinary skill in the art to include an oxadiazole electron transporting monomer in the copolymer material described by Sakakibara (JP), which is known to conduct holes, for the purpose of increasing the electron transport ability of the material for use as a host material for phosphorescent dopants.

With regard to claim 5, '474 teaches the inclusion of a phosphorescent agent as a light emitter in a device (see col. 2, lines 42-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to have used phosphorescent dopant with the multifunctional polymers in order to achieve acceptable light emission by the device.

With respect to claim 6, '390 teaches an electron transport layer for a device (see par. 41). With regard to claim 7, the polymer is used in a layer of a device (see examples). With regard to claim 4, it would have been obvious to one of ordinary skill in the art to have further incorporated additional vinylcarbazole monomer, because it is obvious to combine two materials taught by the prior art as useful for the same purpose to be used for the very same purpose.

Response to Arguments

13. Applicant's arguments filed November 25, 2008 have been fully considered but they are not persuasive.

With regard to Watanabe, Kita, and Sakakibara, applicant argues the references do not suggest a material having three different monomer units. Applicant also argues the references do not recognize the advantage of a material including a copolymer having three different monomer

units. The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Applicant alleges improved properties at Table 2 and pages 55-56 of the original specification. In response, the examiner submits the two materials of the comparison examples are not sufficient to overcome the prior art as they are not fully commensurate in scope with the prior art. Also, the inventive examples are limited to very specific co-polymers whereas none of the claims are as limited. Accordingly, the examples are also not fully commensurate with the breadth of the claimed subject matter.

The examiner maintains the prior art teaches the required monomers of the instant claims and renders obvious the claimed co-polymer material. It is noted that where a claimed improvement on a device or apparatus is no more than "the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement," the claim is unpatentable under 35 U.S.C. 103(a). *Ex Parte Smith*, 83 USPQ2d 1509, 1518-19 (BPAI, 2007) (citing *KSR v. Teleflex*, 127 S.Ct. 1727, 1740, 82 USPQ2d 1385, 1396 (2007)). Applicant claims a combination that only unites old elements with no change in the respective functions of those old elements, and the combination of those elements yields predictable results; absent evidence that the modifications necessary to effect the combination of elements is uniquely challenging or difficult for one of ordinary skill in the art, the claim is unpatentable as obvious under 35 U.S.C. 103(a). *Ex Parte Smith*, 83 USPQ2d at 1518-19 (BPAI, 2007) (citing *KSR*, 127 S.Ct. at 1740, 82 USPQ2d at 1396). Since applicants have submitted no persuasive evidence that the combination of the above elements is uniquely

challenging or difficult for one of ordinary skill in the art, the claim is unpatentable as obvious under 35 U.S.C. 103(a) because it is no more than the predictable use of prior art elements according to their established functions resulting in the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dawn Garrett/
Primary Examiner, Art Unit 1794

February 23, 2009